

REMARKS

Applicants appreciate the Examiner's thorough consideration of the above-identified application. In response to the Examiner's request, Applicants submit the following amendments and requests.

Claims 1, 2 and 4-24 are pending. Responsive to the objections to claims 8-13, and 19-24, as being dependent upon a rejected base claim, Applicants Wertz et al. respectfully request that the rejection be removed from each base claim for the reasons stated below and submit that all pending claims are in condition for allowance. Applicants respectfully request such allowance.

Responsive to the rejection of claims 1-6 under 35 U.S.C. §102(e) as being clearly anticipated by Bali et al., Applicants submit that Bali et al. does not disclose, teach, or suggest the subject matter of claim 1, and claims 2-6 depending therefrom. The Examiner suggests that figure 1 of Bali et al. discloses that said LGA interconnect comprises "alignment members projecting from said substrate for aligning said substrate relative to at least one of the electrical components." In their specification, however, Bali et al. discloses said alignment members projecting from *the frame*, not the substrate, for the purpose of alignment. "Referring to FIG. 1, to align the interposer assembly... the interposer assembly, can include one or more alignment pins. As illustrated in FIGS. 2 and 3, the alignment pins are located on tabs that *extend outwards from the frame*" (Bali et al. ¶ 0053) (emphasis added). Bali et al. also teach "to align the apertures with the contact pads or traces of the application, *the frame* can include one or more alignment pins" (Bali et al. ¶ 0060) (emphasis added). Clearly, Bali et al. disclose and teach that the alignment pins project from the frame of their interposer assembly, but does not disclose or teach that the alignment pins project from the substrate to align the substrate or panel to at least one electrical component.

Moreover, Bali et al. teach "in different embodiments, the tabs can include openings instead of alignment pins. Those openings can correspond to and relieve alignment pins included on the printed circuit board or the integrated circuit." Bali et al. does not mention in the specification nor disclose in the drawings alignment pins projecting from *the substrate*. As an alternative to alignment pins projecting from the frame, Bali et al. did not anticipate the alignment pins projecting from the substrate; instead, Bali et al. anticipated alignment pins projecting from the electrical component "in a manner commonly known by those of skill in the art." The commonly known practice is to align the contacts with the interconnected components through the frame. Aligning the contacts with the interconnected components through the frame, as Bali et al. teach, *causes* the alignment of the contacts to be skewed as

the density of interconnects increases; therefore, Bali et al. *teaches away* from aligning the contacts by way of at least one alignment pin attached to the *substrate* for a more precise alignment to an electrical component.

The Examiner suggests that the substrate includes the frame as part of an assembly. Applicants have modified claim 1 to read "[a]n LGA interconnect, comprising...a frame housing positioned adjacent to said substrate and at least partially surrounding said array of contacts, and further comprising alignment members attached to and projecting from said substrate for aligning said substrate relative to at least one of the electrical components, said alignment being directly between said substrate and further electrical components, not through said frame."

Rather in Bali, et al. the alignment pins 230 are not attached to the substrate, but rather to the frame, and the alignment is through the frame to the pins. Thus, Applicants amended claim 1 is clearly distinguishable from Bali, et al.

For all the above reasons, Applicants submit that Bali et al. does not disclose or anticipate the subject matter of claim 1, and claims 2 and 4-6 depending therefrom. Removal of the rejection is respectfully requested.

Responsive to the rejection of claims 14-17 under 35 U.S.C. §102(b) as being clearly anticipated by DelPrete et al., Applicants submit that DelPrete et al. does not disclose, teach, or suggest the subject matter of claim 14, and claims 15-17 depending therefrom. The Examiner suggests that the dashed lines of figure 1 and the "screw holes" of figure 1 (reference 34 in the drawing) in the DelPrete et al. specification disclose "alignment members projecting from said substrate for aligning said substrate relative to at least one of the electrical components." Examiner also suggests that regarding claim 17 from figure 8A DelPrete discloses that "said pins are discrete members attached at diametrically opposite positions of said substrate." In their specification, however, DelPrete et al. disclose in figure 1 that "the contact socket assembly comprises a raised outer frame which is substantially rectangular and has *screw holes* disposed at each corner thereof." (Col. 2, lines 54-57). DelPrete et al. also disclose "a flat cover, as illustrated in FIG. 1, has a plurality of captive screws aligned with the holes of the contact socket assembly." (Col. 4, lines 34-37). DelPrete et al. also teach "[t]he *cover* preferably includes captive hardware, in this case, four screws. (Col. 2, lines 44-45) (emphasis added). Clearly, DelPrete et al. disclose and teach that the alignment pins (screws) project from the *frame cover* of their socket assembly, but does not disclose or teach that the alignment pins project from the *substrate* to align the *substrate* to at least one electrical component.

In addition, DelPrete et al. teach "[a]lignment of a leadless component carrier within the contact socket assembly, and maintenance of compressive forces on the carrier to ensure electrical interconnection between the carrier and the array of contact tips is effected by a combination of the bias clip and one of a variety of socket covers, according to the invention." (Col. 4, lines 9-15). The flat cover support with its four captive screws aligns the contact socket assembly. (Col. 4, lines 48-51). "A plurality of cover beams...on each side of the cover... are dimensioned to put sufficient force on a chip carrier aligned in the contact socket assembly to keep the chip carrier in good alignment and to maintain proper electrical interconnection between the array of contact pins and the leadless component carrier contacts." (Col. 4, lines 58-64). Aligning the contacts with the interconnected components *through the frame cover* or with cover beams to apply force to the contact socket assembly, as DelPrete et al. teach, contributes to *overstressing* the contact assemblies and transferring forces to the interconnected component, which cause *degradation* of electrical connection. Therefore, DelPrete et al. *teaches away* from aligning the contacts by way of at least one alignment pin attached to the *substrate* to achieve a more *precise alignment* to an electrical component.

However, Applicants have modified claim 14 to read, Applicants claim "[a]n LGA interconnect...comprising alignment members attached to and projecting from said substrate relative to at least one of the electrical components" (Claim 14) (emphasis added). Claim 17 describes the alignment members as "discrete members attached at diametrically opposite positions of said substrate."

Applicants' invention, as claimed in claim 14, includes distinct advantages over the assembly as disclosed in DelPrete et al. The alignment pins of the Applicants' invention are accurately secured directly to the substrate, not the frame cover, and can be used to precisely locate the contacts to the electrical component for connection; securing the alignment pins to the frame cover prevents such precise location to the electrical component. When stacking interconnecting electrical components, the Applicants invention, as claimed in claim 14, is designed to prevent the exact connectivity problems from overstressed contacts created by projecting the pins from the frame cover as taught by DelPrete et al.

For all the above reasons, Applicants submit that DelPrete et al. does not disclose or anticipate the subject matter of claim 14, and claims 15-17 depending therefrom. Removal of the rejection is respectfully requested.

CONCLUSION

Applicants believe that the application, as amended, is now in condition for allowance and action toward that end is respectfully requested. If any issues remain that can be resolved by telephone, Examiner Zarroli is invited to call the undersigned attorney.

In the event that Applicants have overlooked the need for an extension of time, an additional extension of time, payment of fee, or additional payment of fee, Applicants hereby conditionally petition therefore and authorize that any charges be made to Deposit Account No. 02-0390, BAKER & DANIELS.

Respectfully Submitted,

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CERTIFICATE OF MAILING (37 C.F.R. § 1.8(a))

I hereby certify that, on the date shown below, this correspondence is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the address above on the date indicated below.

Date: January 9, 2006

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By: Eric J. Groen
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